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*COMMENTARY*

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## **The effect of Severe Acute Respiratory Syndrome on a hospital obstetrics and gynaecology service**

The Prince of Wales Hospital is the tertiary referral centre for obstetrics and gynaecology for the New Territories East area of Hong Kong. This article describes how the Severe Acute Respiratory Syndrome (SARS) has affected our service. On 10 March 2003, 18 healthcare workers in a medical ward at the Prince of Wales Hospital reported that they were ill, and on March 11th, 23 were admitted to an isolation ward with 'atypical pneumonia'<sup>1,2</sup>. Between March 11th and March 26th, 138 patients were admitted, 69 of whom were healthcare workers. Since then, new infections have occurred on a daily basis, although, at the time of writing, the number of new cases is declining. Although SARS cases in our hospital were managed in a separate block and neither our obstetric and gynaecological staff nor patients have been infected, the consequences for us were far reaching.

### **Obstetric services**

Our department was officially informed of the 'atypical pneumonia' outbreak on March 12th, one day after an isolation unit had been set up at the Prince of Wales Hospital to deal with new cases. At that time, little was known about SARS. The aetiological agent, mode of infection, incubation period or infectivity were not known. Decisions had to be made quickly, and in the absence of directives from the Hospital Authority, departments decided for themselves. On March 14th, we decided to suspend all term deliveries at the Prince of Wales Hospital and transfer services to the nearby Alice Ho Mui Ling Nethersole Hospital, which had a midwife based low risk delivery unit. Because there was no possibility of transferring the neonatal intensive care unit, preterm deliveries remained at the Prince of Wales Hospital.

On March 16th, we also decided to transfer all remaining antenatal services to the Alice Ho Mui Ling Nethersole Hospital. Despite it being a Sunday, nursing staff were called in and contacted all antenatal patients to inform them of the change. There was concern that we may have been over-reacting, but the uncertainty about whether the infection would spread to other parts of the Prince of Wales Hospital made this action prudent. We not only contacted patients, but also moved essential equipment from the delivery suite to the Alice Ho Mui Ling Nethersole Hospital, re-rostered medical, nursing and clerical staff and

liaised with hospital administration at both hospitals. The press was informed and notices about the changes to the service and also what was required in terms of infection control measures were prominently displayed in all areas of the hospital. These were updated as more became known about how the virus could be transmitted.

The prenatal diagnosis service was suspended completely for two weeks, but was later able to resume on a limited basis at the Alice Ho Mui Ling Nethersole Hospital. Even now, more than nine weeks into the outbreak, no routine obstetric ultrasound is being performed at the Alice Ho Mui Ling Nethersole Hospital.

The routine for postnatal care also changed. Normally, postnatal patients were discharged three days after a normal delivery and five days after caesarean section. This was changed to one and three days, respectively, to reduce the chance of the patients getting a hospital-acquired infection. To our knowledge, none of these changes has had an adverse effect on outcome.

We were fortunate that no obstetric patients booked with us were infected with SARS. If small numbers had become infected, they would have been transferred to another hospital that was designated to deal with infectious disease cases, and which also has an established obstetric service. If large numbers of women had developed SARS, they would have been nursed in a separate ward in the Prince of Wales Hospital, and such a ward was kept vacant for this purpose. Infected women would have been cared for in a separate area of the delivery suite, and as in the medical wards, there would have been designated 'clean' and 'dirty' teams of medical and nursing staff. On the general medical wards, it often took some days to determine whether individuals admitted with a fever actually had SARS, during which time, it was inevitable that SARS and non-SARS patients would mix. Fortunately, this did not occur in the obstetric and gynaecological wards.

As far as we know, a total of 10 pregnant women in Hong Kong became infected. Five infected in the first trimester all recovered uneventfully, apart from one who had a miscarriage. Of five infected in the second and third trimesters, three required preterm surgical delivery for maternal reasons. To date three women have died from SARS, but at the time of writing, all babies had survived despite their prematurity (26–32 weeks of gestation). Two women remain undelivered.

## Gynaecology services

As soon as we became aware of the SARS situation, we cancelled elective gynaecological surgery apart from cancer cases. All other emergency gynaecology cases were transferred to other cluster hospitals. Outpatient gynaecology services were drastically reduced. Instead of routine gynaecology clinics, staff were rostered to review the case notes for each clinic and to set up a priority list for calling patients back when clinics resumed. A mechanism was set in place for renewal of prescriptions. Initially, this attracted some unfavourable press coverage, but those patients whose treatment was delayed voiced remarkably little discontent. As the magnitude of the crisis became apparent, both patients and the public avoided the Prince of Wales Hospital altogether, and the hospital became relatively deserted within a week. Limited outpatient services such as colposcopy and postmenopausal bleeding clinics resumed after eight weeks.

All urogynaecology and most infertility services were cancelled from the beginning of the crisis, and remain suspended. Patients scheduled for assisted reproductive technology procedures in the first three days after the closure of obstetrics at the Prince of Wales Hospital were allowed to complete their treatment, but all other treatments were suspended. This included some women who had already commenced ovarian stimulation for *in vitro* fertilisation. It was felt inappropriate to assist couples to achieve a pregnancy when the mother was at risk of contracting SARS and needing possibly teratogenic antiviral agents. Secondly, although it had been years since an *in vitro* fertilisation patient needed admission to the intensive care unit for treatment of ovarian hyperstimulation syndrome, we could not risk this occurrence as our patient would then have been in close proximity to SARS patients and also healthcare workers.

## Medical staff

In the initial stages of the outbreak, none of the obstetric or gynaecological medical staff were involved in the management of SARS cases. As services moved to the Alice Ho Mui Ling Nethersole Hospital, clinic rosters had to be changed and staff had to travel frequently between the Prince of Wales Hospital and the Alice Ho Mui Ling Nethersole Hospital, which are a little over 10 km apart. Communication during this period was mostly by email, with new information being circulated at least daily.

Soon after the outbreak, some obstetric or gynaecological staff volunteered to assist the physicians, either directly, or by treating some of the non-SARS medical patients. This loss of departmental manpower was not a problem as services had been so severely curtailed. Later in the outbreak, the general medical units became overwhelmed, and all other departments provided about one-

third of their manpower, some randomly selected, to assist directly or indirectly with care. This system is still in place, and it remains unclear when our departmental rostering will return to normal.

## Nursing staff

The movement of obstetric services from the Prince of Wales Hospital to the Alice Ho Mui Ling Nethersole Hospital necessitated the transfer of 132 nursing and ancillary staff. In addition, 27 members of the nursing and ancillary staff, mostly volunteers, were transferred to units caring for SARS cases. Absenteeism did not increase noticeably. In fact, some healthcare workers continued to report to work even when they had felt ill or had a slight fever, and some of these were subsequently confirmed to have SARS. This devotion to duty may not only have delayed their own treatment but may have also increased the chance of transmission to other colleagues.

## Medical students

Our department normally has around 40 medical students, but from March 13th all teaching stopped and students were sent home seven weeks into their normal 10 week obstetrics and gynaecology module. The end of module examination was held as originally planned in the last week of April.

The end of year examination in the first week of May normally involves an external examiner, but this was not possible because of the WHO advisory against travel to Hong Kong. Nor could we use real obstetric and gynaecology patients, thus, simulated patients were used instead, with the roles being played by doctors or other volunteers. This reformatted examination was well received and will now form the basis of a fundamental update on assessment of students.

The new teaching year begins in July. Sixteen medical students were infected with SARS after contact with the index case on the medical ward at the beginning of the outbreak. It remains to be seen how much clinical contact medical students will receive at the beginning of the new teaching year, but many teachers are already demonstrating their flexibility in approach and using mannequins and other methods to teach clinical skills. An infection control module will be added to the curriculum at the beginning of July, and students will be tested on this before contact with patients is allowed.

## Unforeseen problems

Once the accident and emergency department at the Prince of Wales Hospital closed, increasing numbers of

new SARS patients were admitted to the Alice Ho Mui Ling Nethersole Hospital and the advantage in having transferred obstetric care out of the Prince of Wales Hospital was lost. Services were therefore transferred back to the larger Prince of Wales Hospital after six weeks because the Alice Ho Mui Ling Nethersole Hospital was at risk of being overwhelmed with new SARS cases. All wards at the Prince of Wales Hospital had to be thoroughly cleaned, and the move took place over three days. The whole obstetric service at the Alice Ho Mui Ling Nethersole Hospital was then closed.

Infection control measures were upgraded progressively as the infectivity of the disease became apparent. Many measures would have been difficult to contemplate under normal circumstances. All inpatients and attending staff had to wear masks, all visitors (including spouses) were banned and all entry and exit points from wards were regulated. Interaction between staff and patients was minimised. Confinement became a high risk procedure, necessitating protection equivalent to or greater than that previously instituted for HIV infected patients. In short, both staff and patients treated each other warily, understanding that each may transmit a fatal disease to another.

Staff who had either been involved in the care of SARS cases or had been working at the Alice Ho Mui Ling Nethersole Hospital required 10 days quarantine to be reasonably sure that they had not become infected before returning to the now 'clean' wards at the Prince of Wales Hospital. This made rostering difficult but staff morale remained high.

### Future problems

Our immediate aim is to return services to normal as soon as possible. As long as SARS cases remain in the Prince of Wales Hospital intensive care unit, we are unable to risk surgical procedures, which might need post-operative intensive care. There is also uncertainty about how many of our staff will be required to look after SARS cases in future, and how long they will be away. It is difficult to resume normal outpatient services with too few staff to accommodate the backlog. We do not know how many patients may have sought treatment from general practitioners or private doctors during this time, whose condition

has improved without treatment or how many will still fear returning to a hospital that has been at the centre of the SARS outbreak.

Hong Kong's economy was weak before SARS, and there had been a decrease in birth rate in late 2002 and early 2003. The economy has worsened since the outbreak, so we expect a further drop in the number of deliveries in the next 12 months. Although most clients on our *in vitro* fertilisation waiting list have said that they wish to resume treatment once services open, it remains to be seen how many will actually instigate treatment once it is offered. These issues make planning for services for the next 12 months particularly difficult.

In addition, in the long term it is not known what routine protective measures will be required for both staff and patients. Masks are uncomfortable to wear for prolonged periods, particularly N95 masks, and they also hinder communication. However, because SARS may be transmissible in its early stages or with atypical symptoms, long term protection may be essential.

It is too early for us to identify which of the actions that we took during this time could have been improved upon, and which could have been avoided. We would have liked to publish a firm list of recommendations when faced with an outbreak such as SARS, but it is too early for us to be able to do this with any confidence.

Our experience suggests that early and decisive introduction of control measures is the best strategy. Obstetric services cannot stop but swift suspension of non-essential gynaecological services conserves resources and minimises infection risk.

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